

# **UTAH GUIDELINES FOR RESPONSIBLE USE OF ANIMALS IN THE CLASSROOM**

State Science Education Coordination Committee

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Observation and experimentation with living organisms provide students opportunities to learn science in a way not provided by other modes of instruction. Studying plants and animals in the classroom enables students to develop skills of observation and comparison, a sense of stewardship, and an appreciation for the unity, diversity, interrelationships, and intricacies of life on Earth. This mode of instruction carries with it responsibilities for appropriate and humane care of each animal. Teachers must be knowledgeable about the proper care of organisms under study and the safety of their students (*NSTA Guidelines*, 1991).

## **Instructional Objectives**

Instructional objectives for laboratory and field activities must be clearly stated and developmentally appropriate for the maturity level of the students. The Utah Science Core Curriculum is a good guide for appropriate instructional objectives.

## **Developmentally Appropriate Instruction**

In grades K through 6, the most appropriate instructional use of living organisms is for student observation. Observation of living organisms is an essential component of the Utah Science Core Curriculum and an important learning experience for young students. Dissection is **not** part of the Core Curriculum for grades K through 6. In the sixth grade, microorganisms are investigated and will be destroyed as part of the normal process of student experiments. It is important that safe procedures be followed when growing microorganisms. It is **not** recommended that students randomly culture bacteria or fungi from vertebrate sources (e.g., oral swabs, coughing, spitting). These procedures have the potential to culture dangerous concentrations of pathogenic forms. (See the procedure for safe disposal of microorganisms in the Appendix.)

In grades 7 and 8, observation of living organisms is an essential component of the students' learning experience. Teachers electing to use dissection as an instructional tool to investigate organisms at these grade levels should use invertebrates.

In grades 9 through 12, observation of living organisms provides unique perspectives on the behavior of organisms. Teachers electing to use dissection at these grade levels should use invertebrates when possible; use of vertebrates for dissection should be limited and used only when the concepts to be taught can best or only be taught using a vertebrate specimen.

### **Alternatives to Dissection**

Student views or beliefs related to dissection must be considered. Teachers must consider all perspectives, be sensitive to individual needs, and appropriately accommodate various perspectives. Alternative modes of instruction (e.g., computer simulation, coloring books, models, and the Internet) must be available for students who do not wish to dissect animals or animal parts. It is the responsibility of the teacher to maintain decorum and respect for all individuals in the class and honor their decision to participate or not participate in dissection activities.

### **Parental Consent for Dissection**

For teachers selecting dissection, it is recommended that a disclosure statement be distributed to parents at the beginning of the school year that includes a section on dissection and alternatives available for students. It is always wise to obtain signed parental consent forms prior to use of dissection as an instructional activity.

### **Observation of Living Organisms**

Teachers wishing to bring animals into their classrooms should observe all of the guidelines for the appropriate and/or legal acquisition, care, and release of these organisms. If the candidate animal is considered wildlife, the teacher should examine state and federal regulations addressing collection and possession of zoological species. The use of docents is an appropriate way to bring some wild and domestic animals into the classroom.

The proper care of most vertebrates requires considerably more training and caution than most invertebrates; it is, however, important to note that some invertebrates are protected. Specific knowledge of a species should be acquired prior to bringing it into the classroom. State and federal regulations pertain to most vertebrates and many invertebrates. Always check these regulations prior to accepting or acquiring animals. The Utah Code pertaining to “Collections, Importation, Transportation and Possession of Zoological Animals” may be found online at <http://www.rules.state.ut.us/publicat/code/r657/r657-003.htm>:

State of Utah regulations for collection and possession of wildlife for educational purposes classify species as prohibited, controlled, or non-controlled. These regulations cover crustaceans, mollusks, aquatic insects, fish, amphibians, reptiles, birds, and mammals. Species classified as controlled require the educator to obtain a certificate of registration before collecting or possessing that species. The certificate of registration states the number of animals that may be possessed. An educational institution may be issued a certificate of registration for a prohibited species if, in the opinion of the Division of Wildlife Resources, its educational use is beneficial to wildlife or significantly benefits the general public without detriment to wildlife. Regulation information and classification of specific species may be obtained by contacting a Division of Wildlife Resources office and/or obtaining a copy of R657-3 “Collection, Importation, Transportation, and Possession of Zoological Animals” from the Department of Wildlife Resources.

### **Regarding School Visits**

Many organizations, such as zoos, museums, rehabilitation centers, aquariums, and animal shelters, provide outreach programs for the classroom. When at a school, these groups must follow all school policies. It is the responsibility of the classroom teacher to make visiting organizations aware of school policies relevant to their visit. Teachers should always remain in the classroom with the students during the visit.

### **Appropriate Release**

Butterflies are an example of organisms often used in elementary schools. It is appropriate to do so. It is encouraged that these organisms be properly released. For this reason, spring is the best time of the year to raise butterflies. If you wish to release the butterflies after observing them, you must use only organisms that are appropriate for release into the local environment. Many organisms are **not** appropriate, or are even illegal to release into the environment. It is illegal to release any fish into Utah waters. If a species is not native to Utah it should not be released. Even some native species should not be released. The Utah Division of Wildlife resources can provide information and guideline that address this issue. The Internet resource for the Department of Natural Resources is located at: <http://wildlife.utah.gov/fishing>.

### **Humane Treatment of Animals**

Humane treatment of all animals used for classroom observation is required. When bringing animals into the classroom, a conscious effort must be made to provide guidance for students to develop an understanding of and value for life and living organisms.

- Acquisition and care of animals must be appropriate to the species.
- Student class work and science projects involving animals must be conducted under the supervision of a science teacher or other trained professional.
- Teachers sponsoring or supervising the use of animals in instructional activities (including acquisition, care, and disposition) will adhere to local, state, and national laws, policies, and regulations regarding the organism.
- A procedure for the disposal of animals at the conclusion of the study must be developed and implemented.
- Laboratory and dissection activities must be conducted with consideration and appreciation for the organism.
- See the Appendix for “Experiments With Animals That Are Unacceptable.”

### **Laboratory Safety**

Safety issues require that precautions be taken whenever working with animals or animal specimens. Safe Operating Procedures (SOP) for each activity should be outlined prior to the start of any activity.

- Laboratory and dissection activities must be based on carefully planned instructional objectives.

- Instruments (e.g., probes, scalpels) used in dissection should not pose safety hazards, and students should be properly trained in the safe use of laboratory tools.
- Teachers must instruct students on safety precautions for handling live animals or animal specimens.
- Laboratory and dissection activities must be conducted in a clean and organized workspace, using care and laboratory precision.
- See the Appendix for “Experiments With Animals That Are Unacceptable.”

### **Use of Human Tissue or Fluids**

Due to safety considerations, human blood and fluids should **not** be used in laboratory activities. Students in classroom activities may use professionally prepared slides of human tissues. For students in grades 7-12, the following tissues may be safely used for observation and/or DNA analysis:

- Hair
- Properly sampled cheek cells (see the procedure for safe cheek cell harvesting in the Appendix)

### **Health Science and Technology Education**

Specialized Health Science and Technology Education programs have a separate set of guidelines for dealing with human tissues and fluids that permit their use with appropriate precautions.

## Appendix

### Contents

1. A Procedure for Safe Cheek Cell Harvesting
2. A Procedure for Safe Disposal of Microorganisms
3. Animals Posing Unreasonable Risk in the Classroom
4. Animals Requiring Special Cautions or Handling Requirements
5. Experiments With Animals That Are Unacceptable
6. Health Science and Technology Education

### 1. A PROCEDURE FOR SAFE CHEEK CELL HARVESTING

#### Materials:

- Cotton swabs
- Distilled water
- Methylene blue solution (safranin or iodine stain can be substituted)
- Clean slides and cover slips

#### Procedure:

1. Moisten the cotton swab with distilled water. Swab should be moist but not dripping wet—too much water will dilute the number of cells harvested.
2. Wipe the swab all around the inside of your cheek, and rub the swab over the whole slide, twisting the swab to ensure distribution of the cheek cells on the clean slide.
3. Add a drop of methylene blue (or selected stain), then add the coverslip.

#### *Variations:*

- 1) *If the resulting cells are too clumped to see, make a new slide as per the above instructions, BUT instead rub the swab on a slide that has a drop of distilled water on it. Stain as directed.*
- 2) *Remove some of the cotton from the swab to increase the number of cells harvested.*

#### *Notes:*

- *This procedure can also be used to make Barr body slides.*
- *Professor Dave Braegger has used this procedure successfully at Southern Utah University Human Physiology labs for the last five years without having any student using this technique draw blood.*

### 2. A PROCEDURE FOR SAFE DISPOSAL OF MICROORGANISMS

It is not recommended that students randomly culture bacteria or fungi from biological sources (oral swabs, coughing, spitting, etc.). The potential for culturing dangerous concentrations of pathogenic forms is too great. As a wise precaution, culture dishes should be taped shut immediately following inoculation and not reopened. In addition, cultures should not be incubated at “body” temperature (98° F – 100° F). This could cause mutations that could affect human health. For disposal, cultures should be

incinerated, autoclaved, or immersed in and flooded with a strong disinfectant solution or diluted chlorine bleach solution.

### **3. ANIMALS POSING UNREASONABLE RISK IN THE CLASSROOM**

- Wild animals (unless accompanied by docent or other professional)
- Poisonous animals
- Wolf hybrids
- Stray animals
- Aggressive animals

### **4. ANIMALS REQUIRING SPECIAL CAUTIONS OR HANDLING REQUIREMENTS**

- Chicks, ducklings, and pheasants
- Fish, turtles, and other reptiles

All animals in the classroom pose certain risks; however, a teacher who follows the following USOE recommendations will minimize nearly all risks.

If you plan to hatch chicks, ducklings, and pheasants in the classroom, please read the facts concerning disease and hatching chicks in the classroom by visiting this web page: <http://pa4h.cas.psu.edu/curricula/embryology.html>.

Secondly, it must be determined where the chicks, ducklings, or pheasants will go once they hatch (e.g., farm, local zoo, park, etc.). Be sure to get permission and arrange this BEFORE you begin incubating. Also be aware that incubation is a scientific process. If you follow established procedures for temperature, humidity, and turning, you will have a more successful hatch. More information about hatching can be found at <http://lancaster.unl.edu/4h/Embryology/Resources.htm>. However, even if the incubation conditions seem “perfect,” you may still have deformities (improper leg or wing development, neurological disorders, etc.). This should be addressed with students prior to the activity so they will not be “shocked” if deformities occur; they need to understand that in nature, everything is not always perfect.

The U.S. Centers for Disease Control and Prevention (CDC) say that pet reptiles and amphibians are responsible for about 93,000 cases of *Salmonella* each year. *Salmonella* infections may occur in those who haven't washed their hands properly after handling these animals. To avoid *Salmonella* from fish, turtles, and other reptiles, the CDC has several important recommendations:

- Always wash your hands thoroughly after handling a reptile or amphibian, or its cage.
- Do not allow reptiles or amphibians in the kitchen or other food preparation areas.

- Do not wash reptiles, amphibians, their cages, or their dishes in a sink where food is prepared or where children wash their hands (a custodial sink may work for this).
- After a sink is used for the purposes mentioned above, clean and disinfect the sink thoroughly with bleach.
- Do not let reptiles or amphibians roam about the classroom.
- Keep reptiles and amphibians away from children younger than five years of age and individuals with poorly functioning immune systems.

## **5. EXPERIMENTS WITH ANIMALS THAT ARE UNACCEPTABLE**

- Experiments that cause pain or discomfort to the organism.
- Behavioral studies involving punishment of animals.
- Induction of nutritional deficiencies or toxicities.
- Exposure of animals to microorganisms, ionizing radiation, cancer-producing agents, or other harmful drugs or chemicals.

## **6. HEALTH SCIENCE AND TECHNOLOGY EDUCATION USING HUMAN TISSUE AND FLUIDS**

Specialized Health Science and Technology Education programs that require state or national licensure, certification, registration, and/or endorsement may utilize human tissue, blood, and/or fluids in supervised laboratory activities to meet program requirements. Health Science and Technology Education programs include:

- Blood Bank Technician/Phlebotomist
- Dental Assisting
- Clinical Laboratory Technician
- Emergency Medical Technician
- Medical Assisting
- Nurse Assisting
- Surgical Technician

Due to the nature of procedures performed by students in laboratory and clinical settings, OSHA guidelines—specifically OSHA Rule 66:5317-5325 Occupational Exposure to Blood-borne Pathogens, Needle Stick and Other Sharp Injuries—must be followed, and appropriate vaccinations are required. OSHA guidelines are located at [www.osha.gov](http://www.osha.gov).